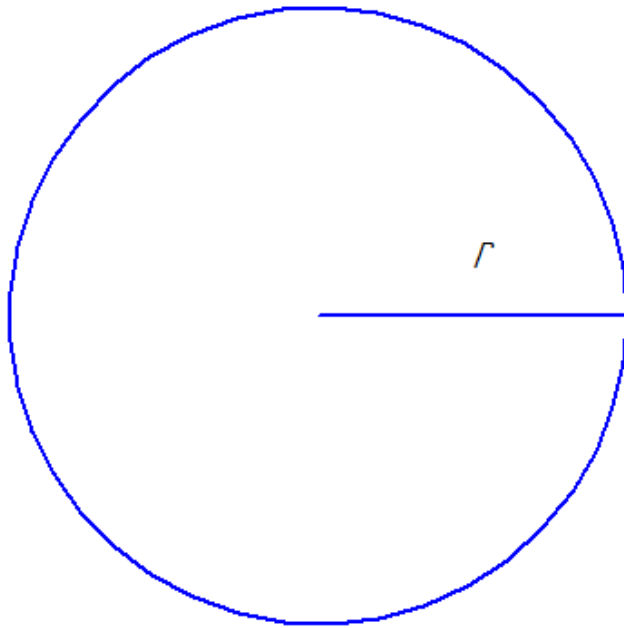Task i need the mass and density of a sphere made of solid glass with a 32 cm circumference.
Solution:

Input Data l=32 cm=0.32 m $\rho = 2200 \, \frac{kg}{m^3}$

Need to find: m

Solution:

The radius and circumference of a circle is related via the following formula.

From this formula, we find the radius of the circle and the radius of the sphere

$$l = 2\pi r \rightarrow r = \frac{l}{2\pi}$$

Volume of a sphere with a radius of the sphere is related by the following formula

$$V = \frac{4}{3}\pi r^3$$

Body weight is equal to the product of the density of the body on the amount of body:

$$m = \rho V = \frac{4}{3}\pi r^3 \rho = \frac{4}{3}\pi \rho \left(\frac{l}{2\pi}\right)^3 = \frac{l^3}{6\pi^2}\rho = 1.21 \text{ kg}$$

Answer: 1.21 kg